Which are the most suitable contextual indicators for use in widening participation to HE?

Journal:	*Research Papers in Education*
Manuscript ID	RRED-2017-0046.R1
Manuscript Type:	Long Review Article
Keywords:	Widening participation, Contextualised admissions, Higher education, Disadvantage, Social justice

Which are the most suitable contextual indicators for use in widening participation to HE?

Abstract

UK universities are increasingly making decisions about undergraduate admissions with reference to various contextual indicators which are intended to identify whether or not an applicant comes from a disadvantaged family, neighbourhood or school environment. However, the indicators used are often chosen because they are readily available, without much consideration of the possible alternatives and their comparative quality. This paper presents a review of existing research literature to assess many potential contextual indicators, and their relationship to outcomes in UK higher education. A search was made of relevant electronic databases, yielding around 120,000 reports initially, and 28 categories of indicators. Each indicator was assessed on the basis of existing evidence concerning its relevance, reach, availability, accuracy, reliability, and completeness – and in terms of whether its use might inadvertently create a different kind of injustice or lower the student outcomes for universities.

Many possible indicators are not readily available, or accurate enough for use in policy and practice. In general, indicators concerning individual circumstances are more relevant than area-based or school characteristics. There are some indicators for very small categories that can be used relatively un-problematically as long as the data can be made available at time of candidate selection, and these include being a recent refugee or asylum-seeker and having spent time living in care. The category of mature applicant is relatively unproblematic, but it is not clear that simply being older than traditional age is a disadvantage. None of these is a solution to the more general issue of contextualised admissions. Having a disability or special educational need is clearly linked to lower attainment and participation but not for all categories. The range of recorded disabilities is so great that a simple yes/no flag is not appropriate. If contextualised admissions is to be the favoured approach, then the most general indicator, most suitable for use, is considered to be eligibility for free school meals (FSM). FSM should be based on a more refined measure than the usual yes/no threshold – and following our secondary analyses reported elsewhere we propose the number of years an applicant has been known to be FSM-eligible. However, this is not to say that contextualised admissions is the way forward, and the article also presents alternative such as more open access to higher education.

Introduction

This paper outlines a range of approaches to widening participation before explaining the logic of contextualised admissions, preparatory to our review of the evidence on indicators available for contextualised admissions.

Widening participation

The home countries of the UK, member states of the EU, and many countries worldwide have concerns about the stratified nature of the student body in first-time undergraduate higher education (Triventi 2011). Students from less advantaged social and economic backgrounds

are under-represented in UK higher education institutions (HEIs), especially in the most selective universities and in some subjects leading to professions (BIS 2011, Broecke 2015, Author 2015). So, there are two levels of selection and stratification. There is the issue of which first-time candidates are successful in entering higher education at all, and the problem here lies largely in the choice to continue with academic education from age 16 or not. And there is the issue of which university (and course) the candidate applies or is admitted to. In the UK, the most selective and so the most stratified universities tend to be the traditional and older ones.

Some comparative studies suggest the situation is more pronounced in the UK than other developed countries (Jerrim and Vignoles 2015). These patterns of unequal participation have improved since the 1960s (Author et al. 2007), but they still exist despite two major waves of higher education (HE) expansion in the 1960s and 1990s (Adnett et al. 2011, Author 2011). This has led to a number of attempts to 'widen participation' for the kinds of students currently under-represented in HE. And this activity is associated with some widening of participation overall in HE, but still less so in the 'top' universities (Harrison 2011), and in demand areas like STEM subjects (Smith and White 2011). In fact, while disadvantaged students are just as likely to continue in education or training after the age of 18 as their peers, they are slightly less likely to continue to higher education (DfE 2016).

The basic problem is that access to HE is largely predicated on prior attainment, which is itself stratified in terms of the same variables and sub-groups (Author et al. 2007, Vignoles and Powdthavee 2009). Students from less advantaged backgrounds are under-represented at least partly because their prior qualifications are lower on average than their peers (Broecke and Hamed 2008, Chowdry et al. 2013).

The two main strategies for widening participation in higher education have previously been outreach work by higher education providers to encourage young people from disadvantaged backgrounds to apply to university, and efforts within the secondary and further education sectors to improve the pre-university academic attainment of pupils from disadvantaged backgrounds in order to increase the pool eligible for university admission. However, research has shown that many young people express a desire to go to university, including those from disadvantaged backgrounds, suggesting that limited aspirations play only a small role in the uneven social composition of university entrants (Kintrea et al. 2011, Author et al. 2011). A much more significant role is played by the seeming intractability of social disparities in prior school achievement.

Contextualised admissions

Partly in recognition of this persistent socioeconomic gap in school achievement, a third widening participation strategy is now being widely promoted – the use by universities of contextual data about prospective students' socioeconomic and educational circumstances to inform admission decision-making (Panel on Fair Access to the Professions 2009, Cabinet Office 2011, Social Mobility and Child Poverty Commission 2014, Office for Fair Access 2015). Context – in the sense of the levels of disadvantage and challenges faced by pupils – has long been established as important in studies of school performance and improvement from a social justice perspective (Author 2000, Thrupp and Lupton 2006). Economically disadvantaged students face contextual challenges that necessitate additional efforts and

resources not required by others, including money, time, knowledge, courage, sacrifice, and taking risks (Drotos and Cilesiz 2016). This means that "equal examination grades do not necessarily represent equal potential" (Schwartz 2004, p.5). This is partly because "in many cases [university] entry requirements have risen well beyond what is required to succeed in degree level study" (Commission on Widening Access 2016, p.10) as universities have sought to reduce the burden of rising numbers of applications to fixed numbers of course places.

Contextualised admissions (CA) policies are a kind of positive discrimination within the current setup (Clayton 2012). All Scottish higher education institutions now use some form of contextual data to inform admissions decision-making in some manner, including prioritising applicants from under-represented groups for standard offers and/or adjusting entry requirements (Universities Scotland 2016). Across the UK higher education sector, many universities currently take into account the socioeconomic context of applicants' attainment when deciding whom to shortlist, interview, make standard or reduced offers to, or accept at confirmation as 'near-misses' (Moore et al. 2013), and most universities state that they plan to use contextual data in the future (Supporting Professionalism in Admissions 2013).

Government guidance on the use of contextual data in undergraduate admissions has stressed the need for policies and practices to be "fair, transparent, and evidence-based" (BIS 2011, OFFA 2013 p.22, SFC 2015). However, the impact of CA has not yet been rigorously evaluated. The indicators of context used are often chosen because they are readily available, without much consideration of the possible alternatives and their comparative quality. The process of selecting students on the basis of contextual indicators is largely dependent on "tutors' professional judgment" (SPA 2015). Few universities seem to reference research evidence to support their contextual admissions policies. Yet, in order to be effective, the indicators must be accurate, appropriate and complete, and policies for their use must demonstrably widen participation without unduly compromising overall student achievement (SPA 2010, Bridger et al. 2012). It would also be better if the approach was relatively uniform across the sector, which would involve a more collective effort than currently (Social Mobility and Child Poverty Commission 2012, 2013). This paper offers a scoping review of the quality of available indicators for judging context, and the existing evidence base on how contextually-identified students perform in higher education. In this way, we can make recommendations for the better use of evidence in practice, and even about whether such contextual indicators can be used at all.

The structure of this paper

The next section of this paper looks at a range of possible indicators of disadvantage, and the qualities they would need in order to be used fairly for contextualised admissions. The paper briefly describes the methods used in searching for published evidence about these indicators, and then outlines the evidence on the qualities of each. The paper ends by looking at the implications for practice and the next steps for research.

Possible indicators of disadvantage

Some of the common tools used for admissions beyond prior attainment, such as interviews and setting tasks for applicants, may lead to more bias in offers and entry (Stringer 2008, Barrow et al. 2009, Author 2016). The use of additional entry tests does not seem to add much of value (Department for Business, Innovation and Skills 2010, Yates and James 2013). The best predictor of success in HE for traditional entry remains prior attainment, based on Key Stage 4 (KS4) attainment at offer stage, and KS5 at acceptance stage (DfE 2013, Gill and Benton 2015). KS4 is the period of secondary schooling ending at age 16; KS5 includes the traditional sixth-form route. So, the rest of the paper focuses on how offers based on prior attainment can be tempered by the appropriate use of contextual indicators.

The kinds of indicators available

There is a wide range of possible indicators of socioeconomic and personal disadvantage that could be used for contextual admissions (e.g. Moore et al. 2013). Indicators can relate to the individual who has applied to university, to their family or peers, or to the school or neighbourhood they come from. This is the list of indicators considered in the paper.

Individual characteristics

These include whether a person

- Is a mature student
- Has a disability
- Is from a potentially disadvantaged ethnic group
- Speaks English as a second or additional language
- Has a potentially disadvantaged gender status
- Is a recent immigrant
- Is a refugee/asylum seeker

Individual experiences

These include whether a person

- Has a non-traditional qualification route to HE
- Has spent time in care
- Has suffered chronic ill health
- Is a young carer themselves
- Has suffered a recent bereavement or other disruption/adversity
- Was a participant in an outreach programme/summer school
- Attended a school targeted by an outreach programme

Family characteristics

These include

- Free school meal eligibility/receipt
- Parent/carer education and qualifications
- Parent/carer occupation or social class
- Educational maintenance allowance (EMA) recipient
- Family receives income/tax credits

School characteristics

These include

- School type, such as whether fee-paying or state-funded
- School average performance at Key Stage 4 (KS4) and/or KS5
- Percentage of pupils eligible for free school meals (FSM)
- Percentage of pupils progressing to HE
- Percentage of pupils receiving EMA, where and when EMA is available

Neighbourhood characteristics

These include

- Income Deprivation Affecting Children Index (IDACI)
- Local HE participation rate (POLAR)
- Index of Multiple Deprivation (IMD) or Scottish IMD (SIMD)
- Neighbourhood socioeconomic demographic (ACORN, MOSAIC)

The necessary quality of indicators used in practice

In order to be used fairly and effectively for the purpose of contextualised admissions, any indicators ought to be easily available to decision makers, accurate, reliable, and have no missing cases or values. They must also lead to increased fairness in admissions. Of course, no indicator will be perfect in all of these respects but these are the intersecting criteria by which they can be judged.

Potential indicators of contextual disadvantage can only be used to inform admissions decisions if they are readily available at the point of admissions decision-making. A range of contextual indicators are currently available to universities via the Universities and College Application Service (UCAS), and UCAS is looking at improving its service to universities in this regard. Some universities supplement the contextual data provided by UCAS with administrative pupil and school data such as that from the National Pupil Database (NPD) of all school pupils in England, and with additional neighbourhood-level metrics available from government and commercial sources. There are, however, some potentially useful contextual indicators that are not currently available at the point of admissions decision-making. For example, universities do not have access to official family income data for applicants, but this could be made available in theory by HMRC (tax office) and/or the Student Loans Company.

Any indicator of contextual disadvantage must be an accurate measure of, and isomorphic to, the concept it is intended to capture – such as socioeconomic or educational disadvantage. The validity of an indicator is compromised if it yields a significant number of false positives, whereby individuals are identified as contextually disadvantaged when they are not. An example of a contextual indicator with low validity in this respect might be the use of a distinction between individuals educated in state and private schools, since many state educated pupils are not socioeconomically or educationally disadvantaged (and a few privately educated pupils *are*). The validity of an indicator is also compromised if it yields false negatives - individuals identified as not contextually disadvantaged when they are. An

example might arise from the use of any threshold, such as for free school meal eligibility, given that although those eligible for free school meals would almost certainly count as socioeconomically disadvantaged those with family incomes just over the threshold for free school meal eligibility are likely to be experiencing very similar circumstances. Precision will also be lower for indicators measured at the aggregate rather than individual level. For example, an individual living in a disadvantaged area may not be typical of others living in the same locale. Self-reported information will generally be less reliable than information that has been administratively verified - due to misreporting, whether intentional or not.

The usefulness of contextual indicators may be compromised by missing data arising from non-response to requests for self-reported status (e.g. a university applicant may leave the 'parental higher education' field blank) or non-response in administrative data (e.g. a pupil legally eligible for free school meals may fail to have registered as such). Such missing data will therefore also *necessarily* compromise all neighbourhood-level and school-level indicators of contextual disadvantage, although this may not be immediately apparent to their users. For example, although all postcode areas of residence are assigned values on neighbourhood-level measures of disadvantage, the underlying individual-level data is likely to be subject to a degree of non-response. And in addition, the unit of aggregation itself, such as the postcode, will also be missing or unclear for additional cases. Missing data causes bias in any analysis and cannot be overcome by using the data we do have to try and estimate the data that is missing (Kalton and Kasprzy 1982, Author 2015).

In addition to these factors, the use of any indicator for contextualised admissions should not lead to a different form of injustice, such as denying a limited place to a more deserving applicant, and ideally it should not substantially lower the overall retention, degree completion and degree classification rates of the HEIs concerned.

The paper looks at all of these characteristics of a good indicator, and summarises the evidence found on their relative quality and usefulness.

Methods

This paper is based on a large-scale scoping review. The first selection criteria for inclusion were for papers or research reports:

- In the English language
- Published 2000-2016
- Relevant to the UK setting

The databases searched include Google Scholar, ProQuest dissertations and theses, and ERIC-EBSCOHOST.

A number of different searches were used. The most basic for Google Scholar was

(contextual*) AND (admission*) AND ("higher education")

The most complex for ProQuest was

((admission* OR admit* OR educat* OR clear* OR select* OR school OR HEI* OR Degree OR tertiary* OR undergrad* OR "higher education" OR "Higher education" OR university*)
AND
(context* OR disadvantage* OR depriv* OR FSM OR ethnic* OR EAL OR gender OR sex OR SEN OR geog* OR IDACI OR postcode OR "reduced price lunch" OR disability OR WP OR "widening participation" OR outreach OR "summer school" OR "supported progression" OR IMD OR SES OR LPN OR "looked after" OR "in care" "family income" OR "parental education" OR EMA OR refugee OR "asylum seeker")
AND
(pupil OR student OR child*)
NOT
(hospital OR medic* OR drug* OR treat* OR therapy*))

This yielded around 120,000 reports in total, from which duplicates or reports or the same research were deleted. The results were screened by title and abstract.

Papers and research reports were then only included if they were relatively large-scale empirical pieces, appropriately designed, with clear descriptions, or if they were detailed discussions of the merits and difficulties of any potential indicator(s). We added to our list pieces already known to us or referred to in pieces uncovered by the search. We also conducted a few explicit searches for work in areas or on indicators that no large-scale, reasonable quality work was found in relation to. This paper necessarily cites only the most relevant and important of the full 231 research reports eventually extracted. The results cannot be seen as either complete or definitive. However, they are unlikely to be changed substantially by the uncovering of research that has been missed so far.

Findings re the indicators

The findings are based as far as possible according on the list of indicators from the earlier section of this paper, but are presented here in terms of their usefulness as contextual indicators – from least to most promising. There tend to be more robust studies in the literature for the more promising indicators. Perhaps the first noticeable finding from this widespread and inclusive review was how little robust and relevant evidence there was.

Indicators not available at admissions stage

There are a number of indicators that are only available by direct report with little or no possibility of verification by admissions authorities, and that have almost no robust evidence from the literature. These include whether an applicant is a young carer for others, has suffered a recent bereavement or similar disruption, and their sexuality. There are several problems with reliance on all such self-reported items, including the fact that the definitions and thresholds used by different applicants will be different and, most importantly, that once it is known that reporting one of these issue leads to preferential offers at university there will be some gaming of the system.

At present, many of the same problems arise with chromic ill health (other than disability/SEN – see below) and gender status. Our review found no good evidence relating to transgender students and attainment at school or HE, for example. Although for each of these indicators it is possible to envisage a system in which official records rather than self-reports were available to admissions authorities, such a system does not currently exist. There are ethical and legal problems concerning confidentiality and data protection of the data subjects.

The latter applies to family income/tax credits as well. The 'risk' to educational attainment associated with low levels of family income (poverty) is clearly larger than that of low levels of school resources, regardless of national income level (Nonoyama-Tarumi and Willms 2010). Family income is often used to create an indicator of poverty and material deprivation, and rightly so. However, it is important to recall that it does not necessarily reflect important information about living standards, or include savings, gifts, borrowing, and assets (Bradshaw 2013). Thus, there could be households which are income poor but not deprived (yielding false positives). Official data on family income is not readily available, which is why FSM and other indicators flagging financial disadvantage for individuals are preferred (see below). The self-reported family income data can be available to university admission authorities via UCAS, but only *after* the institution has made a decision on the application. And even then there is a very high proportion of missing data – including unknown, unclear, and 'I prefer not to say'.

Pupils in receipt of the Education Maintenance Allowance (EMA) are considered disadvantaged. Entitlement depends on meeting certain threshold criteria. And so this is largely an aggregate proxy variable based on more complete and valid indicators that should be used instead. This scheme is no longer operating in England, meaning that EMA status is not available for most home applicants in the UK.

Some of these indicators have promise, and improved validation may become available via schools or official statistics in the future, but they cannot be used as part of a valid approach to contextual admissions at present.

Indicators with little or no promise

Neighbourhood characteristics

Local HE participation rate (POLAR) is a measure of past and present HE participation of the residents in any area – electoral wards of around 5,500 residents on average. All electoral wards are assigned to quintiles based on local progression to HE. Those wards in the lowest quintile according to HE progression are classified as Low Participation Neighbourhoods, and HE applicants from those areas are tagged accordingly. This information is made available to higher education institutions (HEIs) as part of an initial set of contextual items via UCAS.

Those attending university from low participation areas have been found to be more likely to withdraw by the end of the first year (HEFCE 2013), and to perform less well in terms of eventual degree class than those from high participation areas (HEFCE 2014). But studies exploring the impact of coming from a low HE participation neighbourhood have generally

found degree outcomes to be little or no different for these students (Croxford et al 2013a, 2013b, 2013c, Hoare and Johnston 2011, Taylor et al. 2013, Crawford 2014a).

However, it is clear that most disadvantaged families in the UK do *not* live in low HE participation neighbourhoods (i.e. many more live in total in the 80% of wards not in the lowest POLAR quintile), whereas a substantial minority of the wealthiest residents do (Harrison and McCraig 2015). The use of POLAR may therefore lead to increased injustice, and even examples of misuse by admissions staff, where wealthy students from deprived areas are preferred and treated as WP students while poorer students from higher participation areas are disadvantaged. This ecological fallacy is a problem for all area-based measures used in this way, and is discussed further below. It would also be possible to 'game' indicators based on postcode since wealthy families may be able to obtain an address in a disadvantaged neighbourhood for the purposes of increasing their child's university admissions chances (the inverse of what has happened in school preferences in England).

In the UK, long before formal discussion of contextualised admissions, admissions to elite universities (as defined by the report authors) from low participation neighbourhoods showed rapid growth over and above the general increase in HE numbers at that time (Sutton Trust 2005). In fact, the latter may not be coincidental. Historically, the eras of most dramatically widened participation in the UK occurred when numbers have increased, and progress has been lower when widening participation policies, as such, have been prioritised over simply increasing participation.

The Index of Multiple Deprivation (IMD/SIMD) is more complex than POLAR, with seven domains weighted to provide an overall figure of disadvantage for any area, only one of which concerns education. The weights are employment (28%), income (28%), health (14%), education (14%), access (9%), crime (5%) and housing (2%). The data comes from publicly held and official datasets. It also operates on a smaller geographical area than POLAR – a population census Lower-layer Super Output Area of around 1,500 residents. It can be available to HEIs during the application process.

Although these data zones are small they are still not uniform in nature. For example, a high-income family living in a large house on the periphery of an otherwise deprived area and a low-income family in a small home with child support as the only income may be treated identically by IMD/SIMD. The same lack of straightforward link between an individual's social class and where they live also appears with the Townsend index (Do et al. 2006). The IMD approach works particularly poorly with large rural areas of low population density, and certain areas of Scotland (such as Shetland). As with all area indicators, this one is only available to admissions tutors via UCAS if the relevant address details of the HE applicant are known and accurate. In practice a large proportion of this data is missing, and however we then treat the results it will lead to injustice (see below).

The ACORN neighbourhood aggregate measure provides an even smaller unit of analysis, based on the full address postcode with detailed descriptors for each type. ACORN reduces each postcode area to around 10 to 15 households. ACORN draws on a wide range of data sources, both commercial and public sector open and administrative data. These include the Land Registry, Registers of Scotland, commercial sources of information on age of residents, ethnicity profiles, benefits data, population density, and data on social housing and other

rental property. The developing company CACI has created proprietary databases, including the location of prisons, traveller sites, age-restricted housing, care homes, high-rise buildings and student accommodation. It also uses more traditional data sources such as the Census of Population and large-volume lifestyle surveys.

Unfortunately, this information is not automatically available, and universities and researchers would need to pay to access and use it. As with all area measures of this kind, if home post codes are not available, these indicators cannot be used.

MOSAIC information is created by Experian, a global information services group with operations in 40 countries including the UK. It is based on a range of variables including gender, age, household composition, marital status, number of children, age of children, motherhood, time living as a couple, length of residency, social grade, religion, region of birth, ethnicity, type of property, problems in accommodation, age of property, number of rooms, urbanity, home ownership, council taxation bands, house value, employment, occupation code, industry, net household income, wealth, insurance, debt, car ownership, social attitudes, drug, alcohol, pub and clubs usage, criminal records, qualifications, HE records, health, sports, mobile, TV and internet usage, readership, sports, expenditure, grocery and shopping habits. It is based on large sample size, and aggregated either to postcode or more recently to household level.

This data is only available from Experian, and Universities and researchers would need to pay to use this facility. Nothing like it is currently available to all HEIs at time of admission.

The Income Deprivation Affecting Children Index (IDACI), available for the UK, is another aggregated index based on multiple data sources and figures – including family income, number of people living in a household, and the proportion of children living in low income households, for any area. Like IMD it is based on census super output areas. The figure represents the proportion of children under the age of 16 in each super output area living in a low income household.

An IDACI rank or score is currently not readily available through UCAS, but it is an automatic part of the school-age NPD records that could be made available (or it could be created from the applicants' home postcode). As with all such figures a substantial number of cases will have missing postcodes. For example, in NPD between 11 and 13% of cases are missing postcodes and so IDACI scores in each year. And this means that the scores themselves, even for those people whose postcodes are known, will tend to be biased by that missing data since the characteristics of those residents could be missing from the averages. Children previously living in care and some ethnic minorities such as traveller communities may have frequent changes of postcodes, meaning that at any moment their postcode is not known or incorrect. So, if applicants with missing addresses are ignored as contextualised candidates this may omit some of the most disadvantaged. If instead, applicants with no clear address data are automatically treated as disadvantaged this will privilege some students unfairly, and will tend to encourage missing data in applications. The only way to resolve this would be to use other factors indicating disadvantage for each specific individual, but if these are known then there is little point in using *any* area-aggregated measure as well.

Neighbourhood-level indicators are based on students' home postcodes and identify students who live in an economically deprived area, in areas where many residents are from low socioeconomic groups, characterised by a low rate of participation in higher education, or in a rural area. These characteristics of areas are unlikely to be valid indicators of the circumstances of specific individuals. It is an 'ecological fallacy' to assume that people have the modal characteristics of those who live in the same area (or attend the same school, of course). Anyway, most of these area-level indicators are based on the aggregation of unverified self-reports (via the Census of Population, for example), and actually have more missing data included than the individual indicators. The multiple indices use a variety of data items that were not designed for this purpose. A further problem is that several of these variables are based on data or approaches specific to one or more home countries, meaning that a UK-wide system is not possible.

School characteristics

This section considers possible contextualised admissions indicators based on the characteristics of the school attended by the applicant. It is assumed in all of the research cited here that the school (or college) attended is the one from which the application for HE came. However, it is worth considering that the school attended early on, or for most of the applicant's school career, might be more important, and might be less susceptible to games-playing if school attended becomes a key indicator. School-level data may not be comparable UK-wide because of differences in the assessment system. There are differences between the public and private sectors (the iGCSE data is not always included in official DfE figures, for example), and missing data will arise (over and above the usual level) due to movement between schools and the opening and closing of schools.

One apparently simple school characteristic is its type, and the most common distinction is drawn between applicants from state-maintained and fee-paying schools. Once accepted in HE, students from state schools generally perform at least as well as those from private schools (Sumnall 2015, Parks 2011, Partington et al. 2011). In fact, perhaps because they have more potential to develop, many studies find that non-selective state school students outperform their private peers with the same levels of prior qualification (Smith and Naylor 2001, 2005, Naylor and Smith 2004, McNabb et al. 2002, HEFCE 2003, Shulruf et al. 2008, Ogg et al. 2009, Kirkup et al. 2010, Hoare and Johnston 2011, Lasselle et al. 2013, HEFCE 2014, and Crawford 2014a). The same is true for non-selective school students in comparison to grammar school students (Kirkup and Morrison 2011). *Ceteris paribus*, private school students are about 6% less likely to obtain a `good' degree (2:1 or first) than a student who attended a state school (Naylor and Smith 2005). Another study suggested that state school students even did as well as private school students who had two grades higher at A-level (Sutton Trust 2009). There is, some evidence that state school students are more likely (7.4%) not to continue to their second year of HE than their private school peers (3.7%), but this could be explained by differences in prior qualifications and subject studied (HEFCE 2013).

If prior qualifications are ignored, students from private schools are over-represented in UK HEIs, and especially in the most prestigious and selective ones (Author 2013, 2016). This is almost entirely due to differences in application rates and the higher average prior qualifications of private school students. In fact, it may now be slightly harder for private school students to gain access to prestigious universities than their state school peers with the same qualifications (Bhattacharya et al. 2013, Stevens et al. 2013).

Using categories such as private school conflates the major public schools with cheap small sectarian schools (Author 1997). It ignores the fact that many special schools are private, and some mainstream private schools have attractive facilities for children with special educational needs. In fact, special schools more generally appear to provide a good example of a school type with lower attaining pupils and low progression to HE, but they are largely ignored. This approach does not really relate to mature students, or those educated outside mainstream school settings, such as the home-schooled. And it disadvantages the small number of private school attendees who could be among the poorest in society, and attending via a free place, bursary, scholarship or assisted place. Some fee-paying schools are registered as charities and in recent years, since the demise of the state-sponsored Assisted Places Scheme, the Charity Commission has been pushing these schools to take their charitable status more seriously. One way in which these schools have reacted is by taking more pupils on free places from poorer backgrounds. It would reduce the validity of this policy if it then clashed with the use of school type as a contextual indicator, unless a child from a poor family is no longer considered to be disadvantaged if at private school (which reverses the usual logic). If more detail were available on the exact nature of each school (private schools do not have full records in the NPD) then these factors could be addressed. But in the meantime, type of school attended is not justified as a contextual indicator.

Some HEIs are using the average academic outcomes of the school attended by the applicant as a contextualised indicator (Lasselle et al. 2013). Some studies suggest that students from secondary schools with greater average attainment at sixth-form A-level (irrespective of type) perform less well at university (McManus et al. 2013). Others find no link between the average A-level performance of the school, the A-level results of an individual candidate within that school, and subsequent degree performance (Smithers 2004, Hoare and Johnston 2011, Hammond et al. 2012), or even a negative link with coming from a low-performing school (Croxford et al. 2013, HEFCE 2003, Smith and Naylor 2001). Smithers (2004) concluded that "any rigid system which seeks to adjust in some way any given individual offer by reference to the average A-level performance of the school would be less fair than the arrangements which operate now". One study suggests that it is not the absolute level of the school results that matters, but the attainment of the applicant relative to the school. Degree performances were higher for students who achieved A-level grades that were above the average for their school (HEFCE 2014). The situation is therefore unclear, and there may be dangers in using this indicator.

Suitable information can be available to HEIs who sign up to use it. Where comparative attainment data is not available or is unusually low, it is often inferred that this could be due to schools offering alternative qualification systems that are not comparable to national data sets. In such cases, the attainment data for that year is flagged as not applicable. Data collected from government agencies does not include independent schools in Scotland, which is an important limitation. These schools cannot be given a flag and applicants will therefore receive a 'Missing' flag next to the relevant indicator. There is other missing data, most notably from new schools or those that have closed or merged. This indicator also suffers from most of the same defects as school type (see above).

It is important to note that although the indicator refers to school 'performance' it really relates to raw score indicators. These are not really a measure of school performance at all.

However, attempts to create truer measures of school performance via value-added or progress scores have led to unreliable, unstable and untrustworthy results (Author 2010, Kim and Lalancette 2013).

Applicants from schools with high concentrations of low SES students are less likely to go to university than similarly qualified students in other schools (Frempong et al. 2011). The effects of coming from a school with a high percentage of free school meal recipients was found to be positively associated with degree performance after taking prior attainment into account (Crawford 2014b). This suggests that the overall level of deprivation in a school could be used as a contextualised admissions indicator, without HEIs having to worry about weaker results. Crawford and Greaves (2013) suggest that the level of deprivation in a school is a better measure of context than area measures such as IDACI (see below).

Some commentators have described FSM as a coarse and unreliable indicator for judging school performance that leads to biased estimates of the effect of poverty on pupils' academic progress (Kounali et al. 2008). The percentage of pupils eligible for FSM (or registered for FSM in Scotland) is available either from the School-level Annual Schools Census (SLASC) or via UCAS. Around 4% of cases are missing a value for FSM eligibility in current NPD versions, plus all private schools (a further 7%).

For FSM, as for many other indicators, the school-level figures are derived from individual data of high quality. In nearly all cases it makes more sense to use that individual data instead.

The percentage of pupils progressing to HE from each school in previous years can be available to HEIs via UCAS, averaged over several years to reduce volatility. It is strongly correlated with school outcomes. Three studies, focused on Edinburgh University, explored the effects of coming from a school with a low rate of progression to HE, with mixed results (Croxford et al. 2013a, 2013b, 2013c). Among those with Scottish Highers, students from schools with low HE progression rates performed no differently to comparably qualified peers from schools with a stronger tradition of sending students to university. However, among students with English A-levels, those from low HE progression schools performed worse at degree level. A problem with this indicator currently is that it assumes equivalence between entries to all HEIs, whereas some HEIs demand no prior KS5 qualifications, and others accept only the highest grades.

Attending a school in a disadvantaged area is amongst an initial set of contextual items provided via UCAS. It suffers from many of the same drawbacks as the indicator based on an individual living in a disadvantaged area (see above), and on school attended. If individual data is available this is preferable. If such data is not available, then the aggregate cannot be computed.

Attending a school targeted by an outreach programme suffers from several drawbacks as an indicator. It is not about the individual, a very large number of schools are now targeted by outreach programmes, and most pupils in outreach schools may not be eligible for the programme anyway. Even participation in an outreach, supported progression or HEI summer school programme is not in itself an indication that the participant is disadvantaged. HEIs receive data on this with applications via UCAS, but this data will be incomplete with a lot of

missing values. The information via UCAS is self-reported, although HEIs may be in a position to check the veracity where it relates to their own activities. There has been almost no robust evaluation of the impact of these outreach programmes (Author et al. 2007, 2017). The criteria for participation will differ between schemes and institutions, and may not be clearly enforced (i.e. many participants may not be individually disadvantaged).

In general, using a modal characteristic for an area or school can be a very misleading guide to individual disadvantage. And can lead to at least as much injustice that the stratification that CA is intended to reduce.

Indicators that are not clearly about disadvantage

Having English as an additional language (EAL) can be an indicator of disadvantage given that instruction in the UK is generally in English. However, this is usually only a temporary disadvantage and for some individuals it is not even that. After a few years, and certainly by the end of KS5, the overall attainment of EAL students is noticeably above average (Author et al. 2017). Almost all of the material found in our review related to international students attending Western universities rather than about EAL students at school, or applying to university. The NPD specifies the first language of the home or family, but a substantial minority of cases (9% or more) are missing a valid value in NPD.

Immigrant groups vary considerably in their access to and success in HE, and some face clear barriers (Erisman and Looney 2007). Recent immigrant status would currently have to be based on self-report and is not an indicator available to HEIs via UCAS before decision on application. It is not clear that being a recent immigrant is necessarily an indication of educational or social disadvantage. A student from an English-speaking professional family moving to the UK from the US, for example, would not be considered disadvantaged but would be a recent immigrant.

A recent refugee or asylum seeker is, *ceteris paribus*, more likely to be disadvantaged than a recent immigrant more generally, but this is still not necessarily so. Currently, HEIs only receive this data from UCAS after an institution has made a decision on the application, and the data is based only on how applicants chose to classify and identify themselves in their UCAS applications. A substantial number select 'I prefer not to say', and so there would be considerable missing data as well as uncertainty if this were used for contextualised admissions. Our review found no large-scale or authoritative evidence relevant to this indicator.

For UK residents applying to HE, the clearest 'non-traditional' route is that taken by mature students using prior experience as an alternative to KS5 or similar prior qualifications. First degree mature students are often, perhaps unintentionally, ignored in policy pronouncements and even research about widening participation to HE, which tends to focus on existing, traditional age full-time participants to the exclusion of all other relevant parties and comparators (Author 2013). Mature entrants are more likely to have left HE one year after entry (HEFCE 2013). But, in general, those with non-traditional entry qualifications tend to achieve higher degrees (Hoskins et al. 1997). Whether they are full or part-time, mature students also tend to do better after HE than their younger peers in terms of subsequent graduate employment and salaries (Woodfield 2011). Therefore, this is not a high risk

category for contextualised admissions (i.e. there is little or no danger for HEI performance measures), and age of birth is usually available to admissions tutors, or can be safely estimated from school qualification certificates and other records. Overall, this is easy to implement for contextualised admissions. What is not clear is that is why mature students *per se* should be treated as disadvantaged.

Participation by ethnic minorities, overall, is higher than might be expected from the target population (Author et al. 2007, Chowdry et al. 2008, Gallagher et al. 2009), but not necessarily in the more prestigious HEIs (Author 2013**)**. However, the level of degree completion is then sometimes lower even after age, prior attainment and subject of study are accounted for (Broecke and Nicholls 2007). Black and Chinese minority students are most likely to have withdrawn from their course after one year (HEFCE 2013), or to have been made to withdraw (Woodfield 2017).

It would probably be necessary to disaggregate ethnic minority groups in order to use this indicator to widen participation in an effective manner. Some ethnic groups, such as Chinese, are well represented across the HE sector of the UK. Others, such as Black Caribbean origin students, are disproportionately in less selective or less prestigious HEIs, and others again such as travellers and White UK (from poorer backgrounds) are under-represented in HE as a whole. Even so it is not clear how much any disadvantage is about ethnicity itself and how much about it acting as a proxy for other forms of disadvantage (Strand 2011). Some studies suggest that ethnicity has only a minor link to educational outcomes once other factors such as SES are accounted for (Robinson, 2010, Author 2013), and others suggest that some apparently disadvantaged groups actually do better in some respects after controlling for social class and other factors (Van Dorn et al. 2006).

Ethnicity does not have a clear legal definition, and even in purportedly official statistics such as NPD or the population census it can only be based on self-report. It has a large and growing number of categories, that either fail to capture the real variation or produce unwieldy schemes and tiny cell sizes (Williams and Husk 2012). The term is used in different and contradictory ways (Salway et al. 2010). It could be based on common ancestry, memories of a shared past, a shared cultural identity which might include kinship, or religion, language, shared territory, nationality or physical appearance (Lee 2003). The classification is heavily dependent on the identification of sole ethnicities, with the mixed categories clearly intended to be for a minority. But it is hard to contend that there are many individuals who do not have a mixed ethnic origin of some kind. In NPD, ethnicity has at least as many missing values as FSM and SEN indicators do. Missing, refused or 'not known' is the largest ethnic minority classification in the UK population census, and a common response in UCAS data. All of this does not make it a particularly reliable or valid indicator.

For all of these indicators it is not clear that they are true indicators of disadvantage, although they will include some very disadvantaged applicants who should be picked up in other ways using more valid indicators.

Indicators only available for applicants

At time of admission, the HEIs can have access to a number of variables about individuals that could denote relative disadvantage. Unfortunately, the two discussed here which might

the most valuable are self-reported, and only available for applicants. The latter means that we cannot tell whether any of the groups indicated are under- or over-represented in HE compared to the more general population (for whom figures do no exist).

Mothers' education is a useful predictor of attainment at school (Dearden et al. 2011), perhaps because more educated mothers exhibit higher levels of early education-oriented parental practices which are linked in turn to higher pupil attainment in early schooling (Greenman et al. 2011). Parental education is available to HEIs via UCAS, stemming from the self-report of the applicant. It is likely to be inaccurate because young people are often not aware of their parents' highest qualification (Author 1997), and it generally has a substantial number of missing values. In the 2014 linked NPD/HESA dataset, around 14% of students state that their parents are not educated to degree level, and a further 6% have not given a valid response. Of those students leaving HE without an award, 69% are from these two categories related to parental education. However, most of these fit into other categories of possible disadvantage as well, such as FSM-eligibility or living in low participation neighbourhoods.

Parent social or occupational class background shows consistent variation with individuals' attainment and progression in education, and is correlated to some extent with measures of income and parental education. From a young age, children from more occupationally advantaged families are more ambitious, achieve better educationally and have better occupational outcomes than other children (Croll 2008). Applicants from lower SES backgrounds are less likely to obtain good degree grades (Harris 2010).

HE participation is stratified by social class, especially for the most prestigious universities and the most competitive courses (Zimdars 2010, Gallagher et al. 2009, Harris 2010). Applicants from lower class backgrounds are less likely to apply to Russell Group universities than their comparably qualified counterparts from higher class backgrounds (Anders 2012). But the gap in HE more generally is largely because prior attainment at school is equally stratified by SES (Author et al. 2007, Harris 2010). Once prior attainment is taken into account, HE participation rates in terms of socio-economic status are usually about equal (Marcenaro-Gutierrez et al. 2007, Noble and Davies 2009, Chowdry et al. 2013).

Parental occupation does not have a legal definition, and every classification is notoriously hard to code, and has relatively low inter-rater reliability (Lambert 2002). Its use to give an advantage in contextualised admissions would likely lead to a growth of self-reporting in those categories deemed disadvantaged by admissions tutors (Author et al. 2007). SES data (specifically NS-SEC 4-7) is not currently available to HEIs during the application process, and is only available after the end of the application cycle as part of the UCAS*J data transfer transaction in the autumn.

The proportion of HE applicants in the UK who did not state a parental (or other) occupation on their application has been growing over time (from 5% in 1996 to 18% in 2003), and these non-responders are stratified by age and ethnicity (Do et al. 2006, Parry et al. 2006). By 2007, 26% of HE applicants had unknown or undeclared SES (Harrison and Hatt 2009). Indeed, one of the largest social class groups applying for admission to HE in the UK is generally 'none/not known'. These missing cases tend to be ignored in contextualised admissions and WP figures more generally. This hampers analysis and of course makes it

harder to say whether any WP measures are actually working or not (The National Audit Office 2008). However, the cases with genuinely missing SES clearly tend to be even more disadvantaged than the flagged disadvantaged students, on the basis of other available indicators. The use of parental occupation to monitor widening participation programmes requires caution, given the proportion of applicants who do not provide this information and the age and ethnic group differences noted.

In general, indicators only available for the self-selected body of young people who enter and survive KS5 and then apply to a UK university are not to be preferred as a general solution to CA. In addition to this self-selection, they are lower quality than those indicators below, self-reported with a large proportion of missing cases (Author et al. 2017).

Individual indicators with more promise

In some respects, the indicator that an applicant has spent time in care is not much better than some of those above. However, it could be used in a way that yields few if any false positives. The indicator covers time spent in local authority care by the applicant, and includes public care and living in one or more foster care, semi-independent living or residential care homes for three months or more. Children and young people living in care, or who have previously lived in care, have among the worst educational outcomes in the UK. This indicator has a relatively simple, binary and official definition, and where known this indicator is sent to HEIs via UCAS with application data. However, at present the information is only self-declared by the candidate, and is otherwise unverified. Currently, a lot of relevant data is missing or unclear. Such information is likely to yield both positive and negative misclassifications. It would be better if this data could be made available from official records to a responsible central authority. This means that the candidate would not need to declare it. Our review found very few studies relevant to this indicator and the relevant ones were perhaps necessarily small scale (e.g. Martin and Jackson 2002). The indicator covers only a relatively small number of cases, and any that are verified could simply be tagged for contextualised admissions.

Young people with special educational needs (SEN) or disabilities tend to have lower average attainment and make lower average progress in any phase of schooling (Clarke et al. 2015). This means that they will, on average, be less likely to proceed to HE and so can be treated as disadvantaged in this respect at least.

SEN is not a simple binary indicator and does not have a clear legal definition (Florian et al (2004). The Higher Education Statistics Agency (HESA) uses ten different categories of self-declared disability during data collection from application forms of the Universities and Colleges Admissions Service (UCAS), each of which presents different levels and types of challenges for applicants.

- dyslexia
- blind/partially sighted
- deaf/hearing impairment
- wheelchair user/mobility difficulties
- on personal care support

- mental health difficulties
- unseen disabilities such as diabetes, epilepsy, asthma
- multiple disabilities
- autism
- any other disability not listed above

Multiple challenges are often ignored in recording the most serious one or two for any individual. The allocation to SEN categories tends to be based on pupils' greatest needs at school (DfES 2003). The percentage of missing data for SEN pupils in NPD is relatively high (10% or more).

Even for the data that does exist there are serious concerns about its accuracy, whether in classification or recording (Douglas et al. 2012). The types anyway tend to be conflated into a binary variable when used as an indicator for contextualised admission. This may not be valid for a number of reasons, but most obviously a student with mild dyslexia should not be treated the same as one with both severe visual impairment and mobility problems. It would be fairer to disaggregate this indicator into a number of categories of risk or challenge concerning participation in HE.

The accurate 'identification' of these challenges can itself be stratified by other indicators of relative advantage or disadvantage. Historically, SEN and especially the identification of learning or behavioural problems have been more prevalent among lower SES students. This stratification may be partly accurate, reflecting multiple disadvantages, but it may also be linked to differential diagnosis. Students in disadvantaged or more social segregated school settings are more likely to be diagnosed as having a behavioural disorder, for example, whereas those in more advantaged settings may be treated as being merely 'naughty' (Author 2013). However, this historical trend has changed with the rise of dyslexia and similar unseen disabilities. A disability statement based on dyslexia yields an increased chance in the competitive education system for the child (such as extra time in examinations), and it is clearly the middle-classes in the UK who have taken most advantage of this (Tomlinson 2012). An overall disability flag indicator, most especially a self-declared one, is therefore vulnerable to abuse.

Compared to the school and more general population, students flagged as disabled are actually slightly over-represented in UK higher education (Author 2008), fairly evenly distributed across HEIs, and increasingly completing their first degrees successfully (Pumfrey 2008), being as likely to continue after the first year as other students (HEFCE 2013). Perhaps, while SEN students have lower achievements at school on average, those that enter HE are more successful. However, it is also likely to be that the flag variable is not valid for the reasons suggested above. The key, therefore, is which kinds of students with reported disabilities enter, and succeed in, HE. Students with dyslexia are most likely (86%) to persist with their studies, and those with a physical disability are least likely (70%), among students with any disability (Mamiseishvili and Koch 2011). Such differences in outcomes emphasise the need to disaggregate the 'has a disability' flag, both for contextualised admissions and for the kinds of support HEIs provide after admittance.

Eligibility for or receipt of free schools meals (FSM) relates to applicants from the poorest families in the UK, while they are at school. Documentation is required to be considered

eligible for FSM at school. In practice this refers to any family entitled to income support, income-based jobseekers allowance, child tax credit, the first four weeks of working tax credit following unemployment, the guaranteed element of state pension credit, employment and support allowance, and/or where part VI of the Immigration and Asylum Act 1999 applies. Thus, it is a reasonably secure indicator of official relative poverty (there will be few if any false positives).

FSM has many advantages as an indicator of SES background. It has a clear legal definition in which a child either is or is not FSM-eligible. The inter-rater reliability for judging FSM-eligibility when in possession of the relevant information about the benefits listed above would be very high. The chief criterion – income support – has not changed for decades, meaning that figures are reasonably comparable over time. Recording and reporting of it is a legal requirement for all state-funded schools, and the FSM-status of each child is held as part of the National Pupil Database (NPD) to which higher education institutions, or UCAS itself, could have annual access. The measure is therefore available for nearly all relevant young people, irrespective of whether that person applies to higher education or not. FSM is one of the most comprehensive and accurate measures of SES available.

The 15% or so FSM-eligible pupils have lower levels of attainment at school, on average, and are less likely to continue to post-compulsory education or training (Author 2013). Students from the poorest families are then less likely to attend HE – 66% young-age participation for the richest 20%, but only 24% participation for the poorest 20% (Anders 2012). This is largely due to earlier educational outcomes, but even allowing for prior qualification, a small gap remains in attendance at the more prestigious universities. Students from lower income families are also more likely to drop out of HE, although the difference has reduced since the student fees reforms from 2006 onwards (Bradley and Migali 2015). Student background has been found to make little or no difference to the chances of achieving a first class degree once prior attainment has been accounted for (Smith and White 2015).

On the other hand, the welfare system in the UK naturally provides more assistance to the poorest in society. Those families with incomes just above the threshold for FSM do not receive these benefits to the same extent. Once benefits have been taken into account, some of those families eligible for FSM end up with higher actual incomes than some families not deemed eligible (Hobbs and Vignoles 2010). If the concern is for family income, favouring only FSM-eligible pupils will miss out some of the poorer families simply because, at present, there is no way of identifying those just missing out on benefits, or employed on very low wages. This could involve a new kind of unfairness that does not exist at present. Similar kinds of inequity would arise from the use of any indicator based on a threshold. One possibility would be that HMRC release data on incomes to UCAS, where parents have requested this (see above).

Every year, the NPD has around 11% of cases with unknown FSM status, of which around 7% are in fee-paying schools which do not have to complete the school census (Author 2012). A small number of children will be home-schooled or otherwise simply missing from the register, rather than in fee-paying schools. Some of these can be assumed to be among the poorest in society. The remaining 4% of pupils missing data on FSM-eligibility in state-funded schools would also be ignored and so disadvantaged by a system that used FSM as a context variable for HE admissions. It has been shown from what we do know about these

pupils that they could be among the most disadvantaged in society – with the lowest known rate of qualification. Many are in special schools (while many of the rest are mobile pupils such as Travellers, or recent arrivals such as asylum-seekers perhaps without official papers). Given the level of inclusion of children with special needs in mainstream settings, those in special schools are more often those with very severe learning and other challenges. All of these groups – SEN, Travellers and asylum-seekers – could be among the most deserving of consideration in a contexualised admissions system, yet all would be ignored if they were missing FSM data, and FSM was the criterion used.

It is important to note that FSM-eligibility is not a permanent characteristic for any individual. If eligibility at the time of application to HE were used, then this would ignore what Noden and West (2009, p.4) termed a 'hidden poor' of those pupils previously eligible for FSM but not subsequently. Such pupils may still be suffering the impacts of earlier disadvantage. Instead of the current FSM-eligible or not, we propose using the number of years a student has been known to be FSM-eligible while at school. This has proved to be a better indicator of relative poverty (Author 2016b).

Conclusions

Summary

Some of the individual characteristics deemed desirable for contextualised admissions are not readily available to HEIs, and it is not clear how they could be made available in a trustworthy form. Most have considerable missing data. Some are based on very difficult classifications, or groups that are not necessarily disadvantaged in education. There is so far little or no robust work on refugee or gender status, for example. Ethnicity is difficult to handle, with some clearly under-represented groups such as travellers but others that are over-represented in HE and perhaps attaining at least as well as expected. The easiest individual indicator to use for contextualised admissions is mature application status. This seems relatively unproblematic both in terms of identifying individuals and student outcomes. However, to be a non-traditional age student is not in itself a mark of disadvantage. It is clear that disability and SEN ought to be taken into account. However, types of learning challenge should be disaggregated and handled differently in admissions. Dyslexia, for example, is already catered for when studying and sitting for prior qualifications in a way that visual impairment or mobility problems maybe cannot be. It is also important that the indicator must not be based solely on self-report which is biased both by some wishing to hide or minimise their 'disadvantage' (they may rightly consider it a form of diversity perhaps not catered for by wider society rather than any kind of individual disadvantage), and by parents with the determination and resources to seek a status or statement that might, perversely, provide an educational advantage at school.

A majority of the individual experience indicators deemed desirable for contextualised admissions are not available to HEIs other than via self-report. UCAS or the universities themselves could, with applicants' permission, check with local authority or government records their applicants' claims to refugee/asylum seeker status, having spent time in care, or being a young carer to family members. However this would not get around the problem of non-reporting by applicants who have one of these statuses but choose not to declare it.

Universities could also verify applicants' claims to have been a participant in an outreach programme/summer school or to have attended a school targeted by an outreach programme. For other variables, it is not clear how they could be made available in a more complete and trustworthy form. These include health, bereavement and other serious disruptions. Much of this data is missing or unclear. There is, as far as this review found, little evidence on the quality of such indicators, or the HE outcomes of individuals with many of these characteristics. Even those that should be easily evaluated, such as the impact of outreach work, have not been.

Some of the family background indicators are not easily available, could be misleading, or are hard to classify and have a high number of missing values. Parental income data could be used in theory although this would require applicants to supply information that would enable universities to verify parental income, via HMRC, which would be logistically difficult and have important privacy implications. Despite some limitations, eligibility for, or receipt of, FSM is clearly the best indicator of economic circumstances available at the individual level.

None of a school's characteristics is clearly related to students' achievements at the higher end of the achievement scale at university (Shulruf et al. 2008). Therefore, interventions targeting at-risk populations based on demographic factors should probably focus on individuals or groups rather than on institutions. There is also an argument that no one should be disadvantaged in their *own* application to HE by decisions taken by others (such as which school they attended, or where they lived, as a child). This could be an issue in the future for Human Rights. School-level indicators are not necessarily appropriate for the individual concerned. There is no clear reason to use the average results of the school instead of individual results.

Growing up in a poorer neighbourhood is linked to lower attainment at school (Greenman et al. 2011). Nevertheless, there is some debate as to whether this relationship is causal, and so whether growing up in a more disadvantaged area in a developed country leads to poorer higher educational attainment and labour market success (Mollenkopf and Champeny 2009, Thiele et al. 2015). Sometimes the relevant results appear different for different indicators of potential disadvantage such as poverty and ethnicity. Either way the evidence for some kind of area- or peer-effect is weak. Neighbourhood characteristics are often a misleading indicator of individual status (Roux et al. 2001). At school, one estimate of the predictive quality of neighbourhoods once prior attainment is taken into account is only about 3% (Thompson 2002). The general pattern of findings for degree outcomes for students coming from a low HE participation neighbourhood can be summarised more easily – neighbourhood level contextual indicators tend to be associated with degree performance comparable to or poorer than other students (Hoare and Johnston 2011, Taylor et al. 2013, Crawford 2014a, HEFCE 2014).

All of the area indicators suffer from all or most of the following disadvantages compared to data about individuals themselves. Most aggregate the scores on completely different factors using incompatible metrics – such as population density and cost of housing. These indicators are generally based on a kind of pseudo-quantification that is largely unnoticed and unremarked.

All have problems of definition of the address. It is not clear whose address is used, or which, if there is more than one. For some HE applicants their parental residence might be appropriate. For others it would be their own address that matters (Author 2008). Since the self-reported address has no clear legal status, as soon as it was used as context for admissions there would be an incentive for individuals to claim preferential 'post-restante' addresses, as has happened already to some extent in school admission procedures (Author et al. 2003).

All area indicators require knowledge of the home address anyway. Where this is not known or is unclear, no indicator can be used. If the indicator with incomplete coverage is then used for contextualised admissions, this will disadvantage those whose address is unknown who will tend to be among the most disadvantaged already anyway. If an unknown address itself is used as a marker of disadvantage then there will be an incentive for people not to provide clear information on their home address.

The modal characteristics of the area in which a person lives are anyway only weakly related to their own characteristics, and to use the former instead of the latter is a clear analytical error. There is no point in using both area and individual characteristics to identify disadvantage for the same reason. If an individual is known to be disadvantaged there is little to be gained by also knowing that there are others nearby like them. There is no clear indicator of a peer-mix effect (Author et al. 2107). The approach is also unfair to those individuals who are disadvantaged but happen not to live in an area that is estimated as being among the most deprived. If more specific factors, such as the parental occupation for each individual, are controlled for then the 'socioecological' environment is not relevant in explaining participation in higher education (Heintze 2004).

In fact, using area data in this way appears to be widespread merely because it is currently convenient, relatively simple, and addresses one symptom of widening participation – increasing the number of participants from deprived areas (regardless of whether the individual is deprived or not). Universities Scotland (2012, title page) is therefore not alone in arguing, correctly, that "Widening access is about creating opportunities for individuals not postcodes or data-zones", and that once entry qualifications are taken into account, pupils from disadvantaged areas are as likely to go to HE as anyone else. But the rest of their document is all about zones of residence and the average intake to schools, rather than about individuals as their introduction quoted above would have suggested – and this is what HEIs are responding to. In Scotland, SIMD is *the* contextualised indicator used by most HEIs, and is being ill-advisedly promoted by the Scottish Government and the Commission on Widening Access.

One of the most chronically and systematically under-represented groups in UK HEIs is males, especially working-class males. And perhaps more urgently, young people who have gone through their schooling as the youngest in their year group (the summer-born) are noticeably less likely to go to university. The age and sex of candidate are relatively simple and valid indicators, available to admissions authorities, and are linked to persistent patterns of under-representation. They would make good and safe contextualised indicators, and the fact that they are ignored suggest that the CA agenda may not be really and entirely about remedying injustice.

Implications

At present, the situation for use of contextual indicators in HE admissions is unsatisfactory. Not all universities and colleges use the approach, or to the same extent, or with the same indicators. In the absence of a centralised procedure or a commonly agreed set of indicators universities use a range of different indicators to identify hardships faced by learners for admissions decision making. And most HEIs do not report, or are not able to report, how they do it (McCaig and Adnett 2009). To some extent, they are simply using WP as part of a larger competition to promote enrolment to their own programmes rather than to promote system-wide objectives. Older universities tend to ask for high A-level grades and demonstrate a willingness to be more flexible where there is a low demand for courses. Less prestigious institutions tend to recruit more students from working class backgrounds because of the markets they were able to recruit in rather than because of their widening participation policies as such (Greenbank 2006). Often the rhetoric and justification for selection on the basis of merit or otherwise does not fit the observed practice in the same institution (Pitman 2016). And universities rarely use the same system for selecting candidates anyway, whether they use context as part of it or not (Equality Challenge Unit 2012).

The information on context that HEIs have is often based on self-declared information from UCAS forms. This usually has a high level of missing data, is hard to verify and 'open to abuse' (Moore et al. 2013). In the event of unavailability of administrative data this raises questions about the validity, reliability and appropriateness for use of such indicators. It is not clear to what extent this is much different from the long-standing situation where individual admissions authorities have used the information in references, personal statements, interviews and elsewhere to make judgements about the suitability of candidates over and above their predicted and prior qualifications (Smithers 2004).

Of course, this review should not be taken to mean that contextualised admissions are necessarily the way forward for WP. Contextualised admissions focus on those who apply, or might apply to HE, and this can never be the majority of young people in the current system. They will *not* solve the most serious problems of access for those not even in a position to apply (Hale 2006). The problem is that students move through the phases of education becoming more socially stratified with every choice or transition, including the option to drop out of education entirely (Lucas 2001, Author and See 2009, Author et al. 2017). So, those considering HE are *very* stratified in comparison to their original cohort, but actually not nearly as stratified in terms of each other. Of this group, those who then participate in HE are very similar in many respects to those who do not. The big difference is with the 60% or so of the original cohort for whom HE is not an option. True WP would at least try to include them as well.

Excluding their characteristics from consideration when selecting contextual indicators (such as when using only the figures from HEAS) would be yet another example of the non-participants being excluded from the very evidence intended to promote their participation (Author 2013). None of this may matter for children from the most disadvantaged families who may not want to attend HE, and who may be so far from attaining the necessary prior qualifications that their inclusion would currently be unthinkable. The latter would include some children with the most serious learning challenges. Widening participation is currently aimed at the 'usual suspects' of those most like existing and prior participants. And this

would remain true if context were used to drop a few grade or point requirements for admissions. It would have little or no impact on those outside the mainstream system. Contextualised admissions focus, as all WP schemes do, on those missing access by a few grades or points, not on the really challenged and disadvantaged in society at all. They are also very limited by geography. All of the indicators discussed so far apply only to the four home countries of the UK, and sometimes not even to all of them. WP is very parochial in this respect (Tannock 2013).

Contextualised admissions are also not intended to be a replacement for work to reduce the impact of disadvantage on educational outcomes earlier in life. Such work could not only have benefits for WP but would overcome some of the limitations above – by helping those never likely to go to HE under any system, for example.

If we use prior attainment to select student for HE then the HE system will inevitably have much of the same stratification as prior attainment patterns do – and this will be so even with contextualised admissions, unless they are extreme and prolonged enough to tackle this stubborn problem. But that would raise a new problem of who was intended to miss out in a system of limited places (Barr 2011), especially at more competitive HEIs (Thompson and Bekhradnia 2014). It is clear that making it easier for disadvantaged students to gain entry squeezes out others and that those losing out are not the most advantaged but those just above whatever level of disadvantage is operationalised (Adventures in Evidence 2017). If it is fair to deny a place to one student with noticeably higher grades in favour of another, this suggests a lack of trust in the prior assessment system. One logical response would therefore be not to use prior assessment to select for HE (even though the evidence suggests that it is the best available predictor of success), and have open enrolment instead (Author et al. 2007). Another alternative would be to use a minimal qualification level (matriculation) to decide on entry to HE in general, but not allow HEIs within the national system to select further. Put another way, we do not have to accept the HE system that has evolved since the Middle Ages in the UK, but instead have a clear, open-minded discussion about what a national HE system should look like.

Our next step is to learn more about each plausible indicator, disaggregated, singly and in combination, using official secondary datasets. We will also model the likely impacts from using one or more of these indicators on levels of participation, retention and degree outcomes – starting with a consideration of the size of the pool of candidates with any indicator and at least minimum entry qualifications not currently attending HE. For this purpose we will use the newly linked dataset comprising NPD records for all school pupils in England (and Scotland) from primary school entry up to KS5, and HESA data on university participation and outcomes.

References

Adnett, N., McCaig, C., Slack, K. and Bowers-Brown, T. (2011) Achieving 'Transparency, Consistency and Fairness' in English Higher Education Admissions: Progress since Schwartz?, *Higher Education Quarterly*, 65, 1, 12–33

Adventures in evidence (2017) *Displacing the privileged vs squeezing the middle*, https://adventuresinevidence.com/2017/02/01/displacing-the-privileged-vs-squeezing-the-middle-a-bit-more-evidence/

Anders, J. (2012) The Link between household income, university applications and university attendance, *Fiscal Studies*, 33, 2, 185–210

Barr, N. (2011) Assessing the White Paper on higher education, https://econ.lse.ac.uk/staff/nb/Barr_BISSelectComm110708.pdf

Barrow, M,, Reilly, B. and Woodfield, R, (2009) *The determinants of undergraduate degree performance: how important is gender?,* British Educational Research Journal, 35, 4, 575-597

Bhattacharya, D., Kanaya. S. and Stevens, M. (2013) Are university admissions academically fair? SKOPE research paper no.115, Available from: https://ora.ox.ac.uk/objects/uuid:171fd90d-306e-46bf-b001-398a73a76b28

BIS (2011) *Analysis of progression rates for young people in England by free school meal receipt and school type*, Available at: https://www.gov.uk/government/statistics/higher-eduction-progression-rates-for-young-people-in-england-by-free-school-meal-receipt-and-school-type

Bradshaw, J. (2013) Measuring child poverty: can we do better?, *Poverty,* 144 (Spring 2013), 6-9

Bradley and Migali (2015) *The effect of a tuition fee reform on the risk of drop out from university in the UK*, Lancaster Economics Working Paper Series, http://eprints.lancs.ac.uk/74437/4/LancasterWP2015_016.pdf

Bridger, K., Shaw, J. and Moore, J. (2012) *Fair Admissions to Higher Education: Research to describe the use of contextual data in admissions at a sample of universities and colleges in the UK*, Cheltenham: SPA

Broecke, S. (2015) University rankings: do they matter in the UK?, *Education Economics*, 23, 2, 137-161

Broecke, S. and Hamed, J. (2008) Gender gaps in higher education participation: an analysis of the relationship between prior attainment and young participation by gender, socio-economic class and ethnicity, DIUS Research Report 08 14, http://webarchive.nationalarchives.gov.uk/+/http://www.dius.gov.uk/research/documents/DIUS-RR-08-14.pdf

Broecke, S. and Nicholls, T. (2007) Ethnicity and Degree Attainment, Research Report No. 92, London: Department for Education and Skills, http://webarchive.nationalarchives.gov.uk/20130401151715/http://www.education.gov.uk/publications/eOrderingDownload/RW92.pdf

Cabinet Office (2011) *Opening doors, breaking down barriers: a strategy for social mobility*. London: HMSO

Chowdry, H., Crawford, C., Dearden, L., Goodman, A. and Vignoles, A. (2013) Widening participation in higher education: analysis using linked data, *Journal of the Royal Statistical Society*, 176 Part 2, 431-457

Chowdry, H., Crawford, C., Dearden, L., Goodman, A., and Vignoles, A. (2008) *Understanding the determinants of participation in higher education and the quality of institute attended: analysis using administrative data*, IFS Report, http://www.ifs.org.uk/publications/4279

Clarke, P., Crawford, C., Steele, F., and Vignoles, A. (2015) Revisiting fixed- and random-effects models: Some considerations for policy-relevant education research, *Education Economics*, 23(3), 259-277, http://eprints.lse.ac.uk/54920/

Clayton, M. (2012) On Widening Participation in Higher Education Through Positive Discrimination, *Journal of Philosophy of Education*, 46, 3, 414-431

Commission on Widening Access (2016) *A Blueprint for fairness: Final report of the Commission on Widening Access*, Edinburgh: Scottish Government, http://www.gov.scot/Publications/2016/03/1439

Crawford, C. (2014) *Socio-economic Differences in University Outcomes in the UK: Drop-out, Degree Completion and Degree Class*; Institute for Fiscal Studies: London.

Crawford, C. (2014b) The link between secondary school characteristics and university participation and outcomes. http://www.ifs.org.uk/publications/7235

Crawford, C., MacMillan, L. and Vignoles, A. (2014a) *Progress made by high-attaining children from disadvantaged backgrounds*, London: Social Mobility and Child Poverty Commission, http://dera.ioe.ac.uk/20433/1/High_attainers_progress_report_final.pdf

Crawford. C. and Greaves, E. (2013) A comparison of commonly used socio-economic indicators: their relationship to educational disadvantage and relevance to Teach First, IFS Report R79, https://www.ifs.org.uk/comms/r79.pdf

Croll, P. (2008) Occupational choice, socio-economic status and educational attainment: a study of the occupational choices and destinations of young people in the British Household Panel Survey, *Research Papers in Education*, 23, 3

Croxford, L., Doherty, G., Gaukroger, R. and Hood, K. (2013a) *Widening participation at the University of Edinburgh (1): entry, progression and degree outcomes of SQA-qualified entrants*, report to the University of Edinburgh, Edinburgh: Centre for Educational Sociology, University of Edinburgh *(CES Ref 1221)*

Croxford, L., Doherty, G., Gaukroger, R. and Hood, K. (2013b) *Widening Participation at the University of Edinburgh (2): entry, progression and degree outcomes of A-level qualified students*, report to the University of Edinburgh, Edinburgh: Centre for Educational Sociology, University of Edinburgh *(CES Ref 1302)*

Croxford, L., Doherty, G., Gaukroger, R. and Hood, K. (2013c) *Widening Participation at the University of Edinburgh (3): entry, progression and degree outcomes by subject area*, report to the University of Edinburgh, Edinburgh: Centre for Educational Sociology, University of Edinburgh *(CES Ref 1303)*

Dearden, L., Miranda, A. and Rabe-Hesketh, S. (2011) Measuring School Value Added with Administrative Data: The Problem of Missing Variables, *Fiscal Studies*, 32, 2, 263-278

Department for Business, Innovation and Skills (2010) Use of an Aptitude Test in University Entrance: A Validity Study , Research Paper No. 26, London: Dept for BIS Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32423/10-1321-use-of-aptitude-test-university-entrance-validity-study.pdf

DfE (2013) A comparison of GCSE results and AS level results as a predictor of getting a 2:1 or above at university, London: DfE. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/200903/GCSE_and_AS_level_Analysis_3_1.pdf

DfE (2016) Provisional destinations of key stage 4 and key stage 5 students in state-funded institutions, England, 2014/15, London: DfE Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/559888/SFR47_2016_text_2.pdf

DfES (2003) Consultation: Classification of special education needs, London, DfES

Do, P., Parry, J., Mathers, J. and Richardson, M. (2006) Monitoring the widening participation initiative for access to medical school: are present measures sufficient? Medical Education, 40 (8), pp. 750-758

Douglas, G., Travers, J., McLinden, M., Robertson, C., Smith, E., Macnab, N., Powers, S., Guldberg, K., McGough, A., O'Donnell, M. and Lacey, P. (2012). *Measuring Educational Engagement, Progress and Outcomes for Children with Special Educational Needs: A Review.* National Council for Special Education (NCSE), Trim, Ireland. http://ncse.ie/research-reports

Drotos, S. and Cilesiz, S. (2016) Shoes, Dues, and Other Barriers to College Attainment: Perspectives of Students Attending High-Poverty Urban High Schools, *Education and Urban Society*, 48, 3, 221-244

Equality Challenge Unit (2012) *Equitable admissions for underrepresented groups*, London: ECU, http://www.ecu.ac.uk/wp-content/uploads/external/equitable-admissions-for-underrepresented-groups.pdf

Erisman, W. and Looney, S. (2007) *Opening the Door to the American Dream: Increasing Higher Education Access and Success for Immigrants*, http://files.eric.ed.gov/fulltext/ED497030.pdf

Florian, L., Rouse, M., Black-Hawkins, K. and Jull, S. (2004) What can national data sets tell us about inclusion and pupil achievement?, *British Journal of Special Education*, 31,3, 115–121

Frempong, G., Xin, M. and Mensah, J. (2011) Access to postsecondary education: can schools compensate for socioeconomic disadvantage?, *Higher Education*, 63, 19–32

Gallagher, J., Niven, V., Donaldson, N. and Wilson, N. (2009) Widening access? Characteristics of applicants to medical and dental schools, compared with UCAS, British Dental Journal 207, 433 - 445

Gill, T. and Benton, T. (2015) The accuracy of forecast grades for OCR A levels, Cambridge Assessment Statistics Report Series No.90, http://www.cambridgeassessment.org.uk/Images/243087-the-accuracy-of-forecast-grades-for-ocr-a-levels-in-june-2014.pdf

Greenbank, P. (2006) Institutional admissions policies in higher education, *International Journal of Educational Management*, 20, 4, 249 – 260

Greenman, E., Bodovski, K. and Reed, K. (2011) Neighborhood characteristics, parental practices and children's math achievement in elementary school, *Social Science Research*, 40, 5, 1434-1444

Hale, S. (2006) Widening Participation, Equalising Opportunity? Higher Education's Mission Impossible, *Politics*, 26, 2, 93-100

Hammond, J., Lewis, K., White, H., and Bowman, D. (2012) Adjusting the academy: developing an adjusted entrance criteria scheme in a specialist healthcare and bioscience higher education institution, *Widening Participation and Lifelong Learning*, 13, 3, 45

Harris, M. (2010) *What more can be done to widen access to highly selective universities?* Report from the Director of Fair Access, OFFA

Harrison, N, and McCraig, C. (2015) An ecological fallacy in higher education policy, *Journal of Further and Higher Education*, 39, 6, 793-816

Harrison, N. (2011) Have the changes introduced by the 2004 Higher Education Act made higher education admissions in England wider and fairer?, *Journal of Education Policy*, 26, 3

Harrison, N. and Hatt, S. (2009) Knowing the 'unknowns', *Journal of Further and Higher Education*, 33, 4, 347-357

HEFCE (2003) S*chooling effects on higher education achievement HEFCE 2003/32*, Available at: www.hefce.ac.uk/pubs/hefce/2003/03_32.htm

HEFCE (2013) *Non-continuation rates at English HEIs: Trends for entrants 2005-06 to 2010-11*, Available at: http://www.hefce.ac.uk/pubs/year/2013/201307/

HEFCE (2014) *Differences in degree outcomes: key findings*, Bristol: HEFCE

Hoare, A. and Johnson, R. (2011) Widening participation through admissions policy – a British case study of school and university performance, *Studies in Higher Education*, 36, 1, 21-41

Hobbs, G. and Vignoles, A. (2010) Is children's free school meal 'eligibility' a good proxy for family income, *British Educational Research Journal*, 36, 4, 673-690

Hoskins, S., Newstead, S. and Dennis, I. (1997) Degree performance as a function of age, gender, prior qualifications and discipline studies, Assessment and Evaluation in Higher Education, 22, 317-328

Jerrim, J. and Vignoles, A. (2015) University access for disadvantaged children: a comparison across countries, *Higher Education,* 70 (6): 903-921

Kalton, G. and Kasprzyk, D. (1982) Imputing for missing survey responses. *Proceedings of the Survey Research Methods Section*, American Statistical Association, 22-31

Kim, H. and Lalancette, D. (2013) Literature review on the value-added measurement in higher education, http://www.oecd.org/edu/skills-beyond-school/Litterature%20Review%20VAM.pdf

Kintrea, K. St Clair, R. and Houston, M. (2011) *The influence of parents, places and poverty on educational attitudes and aspirations,* Joseph Rowntree Foundation

Kirkup, C. and Morrison, J. (2011) Prior attainment, school type and performance at HE - what does it mean for schools, colleges and universities? *Education Journal*, 128, p.26

Kirkup, C., Wheater, R., Morrison, J., Durbin, B., and Pomati, M., (2010). *Use of an Aptitude Test in University Entrance: a Validity Study*, BIS Research Paper 26. Available at: http://www.bis.gov.uk/assets/biscore/higher-education/docs/u/10-1321-use-of-aptitude-test- university-entrance-validity-study.pdf

Kounali, D., Robinson, T., Goldstein, H. and Lauder, H. (2008) The probity of free school meals as a proxy measure for disadvantage, http://www.bristol.ac.uk/media-library/sites/cmm/migrated/documents/fsm.pdf

Lambert, P. (2002) Handling occupational information, *Building Research Capacity*, 4, pp.9-12

Lasselle, L., McDougall-Bagnall, J., Smith, I. (2013) School grades, school context and university degree performance: Evidence from an elite Scottish institution, *Oxford Review of Education*, 40, 293–31,

Lee, C. (2003) Why we need to re-think race and ethnicity in educational research, *Educational Researcher*, 32, 5, 3-5

Lucas, S. (2001) Effectively Maintained Inequality: Education Transitions, Track Mobility, and Social Background Effects, *American Journal of Sociology*, 106, 6, 1642-1690

Mamiseishvili, K., and Koch, L. C. (2011). First-to-second-year persistence of students with disabilities in postsecondary institutions in the united states. *Rehabilitation Counseling Bulletin*, 54(2), 93-105

Marcenaro-Gutierrez, O., Galindo-Rueda, F. and Vignoles, A. (2007) Who actually goes to university?, *Empirical Economics*, 32, 333

Martin, P. and Jackson, S. (2002) Educational success for children in public care: advice from a group of high achievers, *Children and Family Social Work*, 7, 2, 121-130

McCaig, C. and Adnett, N. (2009) English universities, additional fee income and access agreements: their impact on widening participation and fair access, *British Journal Of Educational Studies*, 57 (1), 18-36

McManus, I., Dewberry, C., Nicholson, S. and Dowell, J. (2013) The UKCAT-12 study: educational attainment, aptitude test performance, demographic and socio-economic contextual factors as predictors of first year outcome in a cross-sectional collaborative study of 12 UK medical schools, *BMC Medicine*, 11:244

McNabb, R., Pal, S. and Sloane, P., (2002), Gender differences in educational attainment: The case of university students in England and Wales, *Economica*, 69, p. 481.

Mollenkopf, J. and Champeny, A (2009) The Neighbourhood Context for Second-Generation Education and Labour Market Outcomes in New York, *Journal of Ethnic and Migration Studies*, 35, 7, 1181-1199

Moore, J., Mountford-Zimdars, A. and Wiggans, J. (2013) *Contextualised admissions: Examining the evidence*, Cheltenham: Supporting Professionalism in Admissions Programme

Naylor, R. and Smith, J. (2005) Schooling effects on subsequent university performance: evidence for the UK university population, Economics of Education Review, 24, 549-562

Naylor, R. and Smith, J. (2004) Degree performance of economics students in UK universities: Absolute and relative performance in prior qualifications, *Scottish Journal of Political Economy*, 51, 250–65

Noble, J. and Davies, P. (2009) Cultural capital as an explanation of variation in participation in higher education, *British Journal of Sociology of Education*, 30, 5, 591-605

Noden, P. and West, A. (2009) *Attainment gaps between the most deprived and advantaged schools*, London: The Sutton Trust, http://eprints.lse.ac.uk/23921/1/Attainment_gaps_between_the_most_deprived_and_advantaged_schools_(summary).pdf

Nonoyama-Tarumi, Y and Willms, J.D (2010) The relative and absolute risks of disadvantaged family background and low levels of school resources on student literacy. Journal economics of education review, 29, 2, 214

Office for Fair Access (2013) *OFFA guidance on preparing access agreements for 2014-15*. Bristol: OFFA.

Office for Fair Access (2015) Strategic plan: 2015-2020. Bristol: OFFA.

Ogg, T., Zimdars, A. and Heath, A. (2009) Schooling effects on degree performance: a comparison of the predictive validity of aptitude testing and secondary school grades at Oxford University, *British Educational Research Journal*, 35, 5, 781-807

Panel on Fair Access to the Professions (2009) *Unleashing Aspiration: The Final Report of the Panel on Fair Access to the Professions*, http://webarchive.nationalarchives.gov.uk/+/http:/www.cabinetoffice.gov.uk/media/227102/fair-access.pdf

Parks, G. (2011) *Academic performance of undergraduate students at Cambridge by school/college background*, http://www.admin.cam.ac.uk/offices/admissions/research/docs/school_performance.pdf

Parry J., Mathers J. and Richardson M. (2006) Monitoring the widening participation initiative for access to medical school: are present measures sufficient? Med Educ.

Aug;40(8):750-8 http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2929.2006.02535.x/full

Partington, R., Carroll, D., and Chetwynd, P. (2011) *Predictive Effectiveness of Metrics in Admission to the University of Cambridge, University of Cambridge*. Available at: http://www.admin.cam.ac.uk/offices/admissions/research/docs/prefective_effectiveness_of_metrics_in_admission.pdf

Pitman, T. (2016) Understanding 'fairness' in student selection: are there differences and does it make a difference anyway?, *Studies in Higher Education*, 41, 7, 1203-1216

Pumfrey, P. (2008) Moving towards inclusion? The first-degree results of students with and without disabilities in higher education in the UK: 1998–2005. *Journal European Journal of Special Needs Education*. Volume 23. Issue 1. Page 31.

Robinson, J. (2010) The effects of test translation on Young English learners' mathematics performance, *Educational Researcher*, 39, 8, 582-590

Roux, A., Kiefe, C., Jacobs, D., Haan, M., Jackson, S., Nieto, F., Paton, C. and Schulz, R. (2001) Area characteristics and individual-level socioeconomic position indicators in three population-based epidemiologic studies, *Annals of Epidemiology*, 11, 6, 395-405

Salway, S., Allmark, P., Barley, R., Higinbottom, G., Gerrish, K. and Ellison, G. (2010) Researching ethnic inequalities, *Social Research Update*, 58, 1-4

Schwartz, S. (2004) *Fair admissions to higher education: recommendations for good practice*. London: HMSO

SFC (2015) *Learning for All: measures of success, ninth update*. Scottish Funding Council, http://www.sfc.ac.uk/web/FILES/Statistical_publications_SFCST062015_LearningforAllMeasuresofSuccess/SFCST062015_Learning_for_All_2015_Measures_of_Success.pdf

Shulruf, B., Hattie, J. and Tumen, S. (2008) Individual and school factors affecting students' participation and success in higher education, Higher Education, 56, 5, 613–632

Smith, J., and Naylor, R., (2001) Determinants of degree performance in UK universities: A statistical analysis of the 1993 student cohort, *Oxford Bulletin of Economics and Statistics,* 63, p. 29

Smith, J., and Naylor, R., (2005) Schooling effects on subsequent university performance: Evidence for the UK university population*, Economics of Education Review*, 24, p. 549

Smith, E. and White, P. (2011) Who is studying science? The impact of widening participation policies on the social composition of UK undergraduate science programmes, Journal of Education Policy, 26, (5): 677-699(23)

Smith, E., White, P., (2015), What makes a successful undergraduate? The relationship between student characteristics, degree subject and academic success at university, *British Educational Research Journal,* 41, 4, 686-708

Smithers, A. (2004) University Admissions, http://wordpress.buckingham.ac.uk/wp-content/uploads/2010/10/univadmiss.pdf

Social Mobility and Child Poverty Commission (2012) University Challenge: How Higher Education Can Advance Social Mobility, Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/80188/Higher-Education.pdf

Social Mobility and Child Poverty Commission (2013) Higher Education: the Fair Access Challenge, Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/206994/FINAL_Higher_Education_-_The_Fair_Access_Challenge.pdf

Social Mobility and Child Poverty Commission (2014) *State of the Nation: 2014 Report*. London: HMSO

Strand, S. (2011) The limits of social class in explaining ethnic gaps in educational attainment. *British Educational Research Journal*, 37, 2, -229

Stevens, M., Bhattacharya, D. and Kanaya, S. (2013) Are University Admissions Academically Fair, University of Oxford Publication number: 115, http://www.skope.ox.ac.uk/?person=are-university-admissions-academically-fair-2

Stringer, N. (2008) Aptitude tests versus school exams as selection tools for higher education and the case for assessing educational achievement in context, *Research Papers in Education*, 23, 1, 53-68

Sumnall, C. (2015) ANOVA on A*s at A-level and Tripos performance. http://www.admin.cam.ac.uk/offices/admissions/research/docs/Astar_Alevel_Tripos.pdf

Supporting Professionalism in Admissions (2014) *Contextualised Admissions – Issues and considerations for HE providers introducing and implementing contextualised admissions*. Cheltenham: SPA.

Supporting Professionalism in Admissions (2015) *SPA's Use of Contextualised Admissions Survey Report 2015 (with HEDIIP)*. Cheltenham: Supporting Professionalism in Admissions.

Supporting Professionalism in Admissions (2010) *Principles for the Use of Contextual Data in Admissions*, www.spa.ac.uk/documents/ContextualData/Principles_for_the_use_of_contextual_data.docx

Sutton Trust (2005) State School Admissions to Our Leading Universities: An Update to 'the Missing 3000', Available at: http://www.suttontrust.com/wp-content/uploads/2005/04/Stateschooladmissionstoourleadinguniversities.pdf

Sutton Trust and Department for BIS (2009) Applications, Offers and Admissions to Research Led Universities, London: The Sutton Trust. Available from: http://www.suttontrust.com/wp-content/uploads/2009/07/BIS_ST_report.pdf

Tannock, S. (2013) When the demand for educational equality stops at the border: wealthy students, international students and the restructuring of higher education in the UK, Journal of Education Policy, 28, 4, 449-464

Taylor, T., Rees, G., Sloan, L., and Davies, R. (2013) Creating an inclusive higher education system? Progression and Outcomes of Students from Low Participation Neighbourhoods at a Welsh University, *Contemporary Wales*, 26, p. 138

The National Audit Office (2008) Widening participation in higher education in the United Kingdom, NAO Report, www.nao.org.uk

Thiele, T. Singleton, A. and Pope, D. (2015) Predicting students' academic performance based on school and socio-demographic characteristics, Studies in Higher Education, 41, 8, 1424-1446

Thompson, F. (2002) Student Achievement, Selected Environmental Characteristics, and Neighborhood Type, *The Urban Review*, 34, 3, 277–292

Thompson, J. and Bekhradnia, B. (2014) Higher Education: Students at the Heart of the System – an Analysis of the Higher Education White Paper, http://31.25.185.230/wp-content/uploads/2014/02/White_paper_response_08_15c.pdf

Thrupp, M. and Lupton, R.(2006). Taking school contexts more seriously: The social justice challenge, *British Journal of Educational Studies*, 54, 3, 308-328

Tomlinson, S. (2012) The irresistible rise of the SEN industry, *Oxford Review of Education*, 38, 3, 267-286

Triventi, M. (2011) Stratification in Higher Education and Its Relationship with Social Inequality: A Comparative Study of 11 European Countries, *European Sociological Review*, 29, 3, 489-502

Universities Scotland (2012) Widening access to university, http://www.universities-scotland.ac.uk/uploads/WideningAccess%20July12.pdf

Universities Scotland (2016) *Futures Not Backgrounds, Edinburgh: Universities Scotland*, http://www.universities-scotland.ac.uk/wp-content/uploads/2016/09/10537-%E2%80%A2-Futures-Not-Backgrounds-web.pdf

Van Dorn, R., Bowen, G. and Blau, J. (2006) The impact of community diversity and consolidated inequality on dropping out of high school, *Family Relations*, 55, 105-118

Vignoles, A. and Powdthavee, N. (2009) The socioeconomic gap in university dropouts, *The B.E. Journal of Economic Analysis and Policy*, 9, 1, 1935-1682

Williams, M. and Husk, K. (2012) Can we, should we, measure ethnicity?, *International Journal of Social Research Methodology*, 16, 4,

Winterton, M. (2010) SWAP East tracking and retention project, http://www.docs.sasg.ed.ac.uk/SRA/WP/SWAP_Tracking_Report_2010.pdf

Woodfield, R. (2011) *Age and first destination employment from UK universities: are mature students disadvantaged?,* Studies in Higher Education, 36, 4, 409-425

Woodfield, R. (2017) Undergraduate students who are required to withdraw from university: the role of ethnicity, *British Educational Research Journal*, 10.1002/berj.3259

Yates, J. and James, D. (2006) Predicting the "strugglers": a case-control study of students at Nottingham University Medical School, BMJ, BMJ 2006;332:1009

Yates, J. and James, D. (2013) The UK clinical aptitude test and clinical course performance at Nottingham: a prospective cohort study, BMC Medical Education, 13:32, DOI: 10.1186/1472-6920-13-32

Zimdars, A. (2010) Fairness and undergraduate admission: a qualitative exploration of admissions choices at the University of Oxford. Oxford Review of EducationVolume 36, Issue 3, June, pages 307-323 http://www.tandfonline.com/doi/pdf/10.1080/03054981003732286